

**I CLAIM:**

- 1     1.            A water activated release mechanism comprising:
  - 2                    a first probe exposed to the environment;
  - 3                    a second probe exposed to the environment;
  - 4                    at least one first battery electronically connected between the first probe and a first
  - 5                    node;
  - 6                    at least one second battery electronically connected between the second probe and a
  - 7                    second node; and
  - 8                    a squib electrically connected between the first node and the second node.
  
- 1     2.            The mechanism of Claim 1 further including:
  - 2                    a capacitance C electrically connected between the first node and the second node;
  - 3                    a resistance R1 electrically connected between the first node and the second node;
  - 4                    a voltage  $V_c$  across the capacitance C;
  - 5                    a switch between the squib and one of the first node and the second node; and
  - 6                    means for closing the switch if the voltage  $V_c$  is at least a threshold voltage  $V_t$ .
  
3.            The mechanism of Claim 2 wherein the capacitance C comprises at least an  
approximately 2.7 m Farad capacitance.

4. The mechanism of Claim 3 wherein the at least an approximately 2.7 m Farad capacitance comprises six approximately 0.45 m Farad capacitors, and wherein the resistance R1 comprises an approximately 150 ohm thermistor having a negative temperature coefficient, in series with an approximately 350 ohm resister.

- 1 5. The mechanism of Claim 2 wherein the at least one first battery and the at least one  
2 second battery are electrically connected to produce a positive voltage at the first node, and  
3 wherein the switch closing means comprises:

4 a diode connected between the first node and the second node;

5 a cathode terminal of the diode electrically connected to the first node;

6 an anode terminal of the diode electrically connected to the second node;

7 a third node electrically connected between the anode terminal and the second node;

8 a second resister electrically connected between the third node and the second node;

9 and

10 a lead electrically connected between the third node and a control gate on the switch,

11 wherein the switch is normally open, and is adapted to close when the diode conducts.

6. The mechanism of Claim 5 wherein the second resister is at least approximately a 10,000 ohm resister.

7. The mechanism of Claim 5 wherein the diode is a zener diode.
8. The mechanism of Claim 2 wherein the switch comprises a Silicon Controlled Rectifier (SCR).
9. The mechanism of Claim 2 wherein the at least one first battery comprises two 6 volt batteries and the at least one second battery comprises two 6 volt batteries.
10. The mechanism of Claim 2 wherein the squib comprises a minimum force of approximately 100 lbs and a stroke of approximately .25 inches
11. The mechanism of Claim 2 wherein the squib is adapted to provide force and distance sufficient to release the buckle.
12. The mechanism of Claim 2 wherein the squib is in thermal cooperation with a heat sink.
- 1 13. A water activated release mechanism comprising:  
2 a first probe exposed to the environment;  
3 a second probe exposed to the environment;

4           at least one battery electronically connected between one of the set consisting of the  
5           first probe and a first node, and the second probe and a second node, wherein the at least one  
6           battery is electrically connected to produce a positive voltage at the first node;

7           a squib and a switch serially electrically connected between the first node and the  
8           second node;

9           a capacitance  $C$  electrically connected between the first node and the second node;

10          a diode having a cathode terminal and an anode terminal, wherein the cathode terminal  
11          is electrically connected to the first node and the anode terminal is electrically connected to the  
12          second node;

13          a third node electrically connected between the anode terminal and the second node;

14          a second resistor electrically connected between the third node and the second node;

15          and

16          a lead electrically connecting the third node to a control gate of the switch.

14.          The mechanism of Claim 14 wherein the at least one battery comprises at least one first  
battery electronically connected between the first probe and a first node and at least one  
second battery electronically connected between the second probe and a second node.

15.          The mechanism of Claim 14 wherein the switch comprises a Silicon Controlled  
Rectifier (SCR).

16. The mechanism of Claim 14 wherein the capacitance C comprises six approximately 0.45 m Farad capacitors.

1 17. A method for activating a release mechanism, comprising:  
2 closing a circuit between a first probe and a second probe;  
3 creating a positive voltage at a first node from at least one of a first battery electrically  
4 connected between the first probe and the first node, and a second battery electrically  
5 connected between a second node and the second probe;  
6 charging a capacitor electrically connected between the first node and the  
7 second node;  
8 exceeding a breakdown voltage of a diode having a cathode terminal  
9 electrically connected to the first node, and an anode terminal electrically connected  
10 to a control gate of a normally open switch, wherein the switch and a squib are serially  
11 electrically connected between the first node and the second node;  
12 closing the switch;  
13 providing between approximately 550,000 and approximately 5,000,000 ergs  
14 of energy to the squib; and  
15 firing the squib.

18. The method of Claim 18, wherein charging a capacitor comprises charging six approximately 0.45 m Farad capacitors.
19. The method of Claim 18, wherein closing the switch comprises providing a voltage to a Silicon Controlled Rectifier (SCR) serially electrically connected with the squib between the first node and the second node.